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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/782,014

02/19/2004

Selena Chan

P14581

4300

59796

7590

11/24/2009

INTEL CORPORATION

c/o CPA Global

P.O. BOX 52050

MINNEAPOLIS, MN 55402

EXAMINER

SMITH, CAROLYN L

ART UNIT

PAPER NUMBER

1631

MAIL DATE

DELIVERY MODE

11/24/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/782,014	Applicant(s) CHAN ET AL.	
	Examiner Carolyn Smith	Art Unit 1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6 and 8-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6 and 8-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission, filed 8/31/09, has been entered.

Amended claims 1 and 8 and cancelled claims 5, 7, and 13-29, filed 8/31/09, are acknowledged.

Claims herein under examination are 1-4, 6, and 8-12.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6, and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan (US 2002/0119455 A1) in view of Ulmer (US 6,296,810).

Chan describes a method of sequencing a polymer (abstract, 0025) by dividing a polymer sample into a number of polymer subsamples wherein there is a polymer subsample created for each monomer present in the polymer sample wherein only one monomer type in each

subsample is labeled and wherein both labeled and unlabeled instances of the one monomer type are incorporated (0036, 0264, 0265, 0278), sequentially separating each monomer from the polymer subsample (Figure 3, 0131, 0147, 0006, 0015, 0200, claim 122), detecting labels of each separated labeled monomer as a function of time (Figures 2, 3, 0205, 0271, 0274, 0277, 0313), constructing a time map for each monomer in each polymer subsample (Figure 3; 0277; claims 12, 18), and assembling the time maps into a polymer sequence (Figure 3, 0271, 0277, 0025), as stated in instant claim 1. Chan describes the polymer is a nucleic acid, the monomer is a nucleotide, and the number of polymer samples and different monomer types is four (0277), as stated in instant claim 2. Chan describes subsample size of 100,000 (Figure 1, 0312), as stated in instant claim 3. Chan describes the labels are bulky groups (0036, claims 9, 125), as stated in instant claim 4. Chan describes attaching the polymer subsample to a surface (0207, 0033, 0101, 0206), as stated in instant claim 6. Chan describes the polymer is a nucleic acid and using exonuclease sequencing (0006, 0015, 0200), as stated in instant claim 8. Chan describes detecting time between labels with a time-gated detection optical photodetector device (0213-0216, 0224, 0238-0241, 0088), as stated in instant claims 9, 10. Chan describes constructing monomer time maps of each polymer subsamples comprising analyzing the measured time by overlapping data analysis and frequency analysis to construct the time maps as well as assembling maps comprising minimum non-overlapping data analysis (Figure 3, 0025, 0131, 0278, 0073), as stated in instant claims 11, 12. Chan describes a method of sequencing a polymer (abstract, 0025) by dividing a polymer sample into a number of polymer subsamples wherein there is a polymer subsample created for each monomer present in the polymer sample wherein only one monomer type in each subsample is labeled and wherein both labeled and

unlabeled instances of the one monomer type are incorporated (0036, 0264, 0265, 0278), moving an intact polymer across a detector (0033, 0205, 0271), measuring time between labeled monomers (0034, 0213), constructing a time map for each detected labeled monomer (Figure 3), repeating steps (Figure 3; 0277; claims 12, 18), and assembling the time maps into a polymer sequence (Figure 3, 0271, 0277, 0025). Chan describes at least one end of each nucleic acid is attached to a distinguishable label (0277). Chan does not describe sequentially detaching monomers.

Ulmer describes DNA sequencing and using a progressive exonuclease to cleave the next available single nucleotide on the DNA strand to liberate single nucleotides sequentially as well as using fluorescent detection methods (abstract; col. 13, last paragraph to col. 14, first paragraph; col. 15, last paragraph to col. 16, first paragraph). Ulmer describes using native plus dye-tagged nucleotides and detecting labeled nucleotides as a function of time (col. 49, last paragraph to col. 50, last paragraph).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to cleave single nucleotides sequentially as taught by Ulmer in the method of Chan wherein the motivation would have been to automate sequencing with substantial improvements in speed and cost, as stated by Ulmer (col. 1, third paragraph) and Chan (0024-0025). One would have expected success as they both involve improvements in sequencing DNA.

Thus, Chan in view of Ulmer make obvious the instant invention.

Conclusion

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center. The faxing of such papers must conform to the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR §1.6(d)). The Central Fax Center number for official correspondence is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carolyn Smith, whose telephone number is (571) 272-0721. The examiner can normally be reached Monday through Thursday from 8 A.M. to 6:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie Moran, can be reached on (571) 272-0720.

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November 19, 2009

/Carolyn Smith/
Primary Examiner
AU 1631